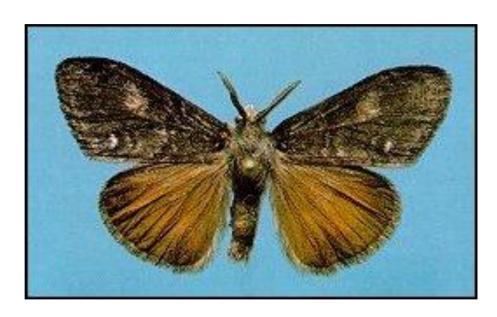
# 2007 North Idaho Douglas-fir Tussock Moth Pheromone Trapping Report





Report No. IDL 07-2 December 2007

# 2007 NORTH IDAHO DOUGLAS-FIR TUSSOCK MOTH TRAPPING SYSTEM REPORT

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## Introduction

Idaho's Douglas-fir tussock moth (DFTM) Early Warning System (EWS) uses a series of pheromone trap sites to identify increasing populations prior to undesirable tree defoliation, a system modified after Daterman et al. (1979). The Idaho Department of Lands (IDL) maintains a network of trap sites from Coeur d'Alene south to Moscow and east to Harvard. Region 1 of the US Forest Service (USFS-R1) maintains sites from Potlatch to Lucille. A portion of these sites is monitored annually.

At each site, five pheromone-baited sticky traps are installed to monitor the flight of male moths. Plots with an average catch of  $\geq 5$  moths per trap are likely sites for larval and egg mass surveys in the surrounding areas. An average trap catch of 25 moths is the threshold used to indicate where heavy defoliation may occur the following year. Follow up sampling is then conducted in these areas to pinpoint injurious population densities (Daterman et al. 1979) and to apply treatments, if necessary.

#### **2007 Trapping Results**

A total of 151 sites were monitored in northern Idaho during 2007. The mean trap capture was 0.43 moths per trap, up from 0.39 and 0.06 moths per trap in 2006 and 2005 respectively. None of the sites had trap captures exceeding 25 moths per trap. Two trap sites monitored by IDL had mean captures exceeding 5 moths per trap. Mason Butte (plot ID 800) and Little Plummer Creek (plot ID 803), both within the Coeur d'Alene Indian Reservation, had trap catches of 7.25 and 5.80 moths per trap respectively (Figure 1, Appendix 1). None of the traps monitored by USFS exceeded 5 moths per trap, although one site, Bargamin Creek (plot ID 5-4), had a mean trap capture of 4.6 moths per trap (Figure 2, Appendix 2).

#### **Defoliation**

The most recent outbreak in north Idaho occurred in 2000, and resulted in three years of defoliation on state and private land between Plummer and Moscow, and in adjacent Clearwater National Forest lands (Fig. 4). Outbreaks of DFTM have occurred in this general area approximately every 8-10 years since the 1940's. Prior to the 2000 outbreak, visible defoliation occurred for one year during 1986. Both outbreaks were preceded by increasing numbers of trap captures (Randall 2002) (Fig. 3). This year's aerial detection survey showed very little DFTM-caused defoliation. Approximately 85 acres were observed on State, private, and BLM lands in southern Idaho.

#### **Larval Surveys**

Larval surveys were performed at 45 of the 120 plots trapped by IDL in 2007 (Appendix 1), and all plots had low populations. Larval population surveys were conducted using the sequential sampling methods described by Mason (1978).

#### **Conclusions**

The DFTM EWS has been effective at predicting outbreaks in northern Idaho. The two latest outbreaks were preceded by several years of increasing trap catches. However, the intensity of the outbreaks was not predicted by trapping alone. Trap catches preceding defoliation in 1986 were similar to trap captures prior to the 2000 outbreak; yet the intensity of the two outbreaks was very different. The outbreak in 1986 caused detectable defoliation for one year, while defoliation in the 2000 outbreak was evident for three years. This confirms the need for additional population sampling, such as egg mass and larval sampling to help determine the intensity of outbreaks (Mason and Torgersen 1983, Kegley et al 2004).

Cocoon and egg mass surveys are conducted in the fall of the same year that trap catches reach the threshold of 25 moths per trap. Larval surveys are performed in the spring and summer of the following year. All surveys are conducted in the vicinity of established plots or in other areas of concern. Cocoon and larval surveys provide estimates of population densities and give more accurate indications of outbreak potential and population trends. Pheromone trapping is designed to detect population changes over large geographic areas.

The DFTM EWS **is not designed nor intended** to predict exactly where the defoliation will occur. Areas sampled on the ground are selected on the basis of the impact of potential DFTM defoliation on management objectives. Douglas-fir tussock moth EWS traps are **not** calibrated for use during an actual DFTM outbreak. As populations increase, a decline in trap catches will typically be noted. Once the traps have signaled a population increase, larval and cocoon/ egg mass surveys are used to determine population levels in that particular area (Sheehan and Ragenovich 2002).

## **Literature Cited**

Daterman, G.E., R.L. Livingston, J.M. Wenz, and L.L. Sower. 1979. How to Use Pheromone Traps to Determine Outbreak Potential. USDA Agriculture Handbook No. 546.11 p.

Kegley, S.J., D. Beckman, and D.S. Wulff. 2004. 2003 North Idaho Douglas-fir Tussock Moth Trapping System Report. USDA Forest Service, Northern Region, Forest Health Protection Rpt. 04-6. 7pp.

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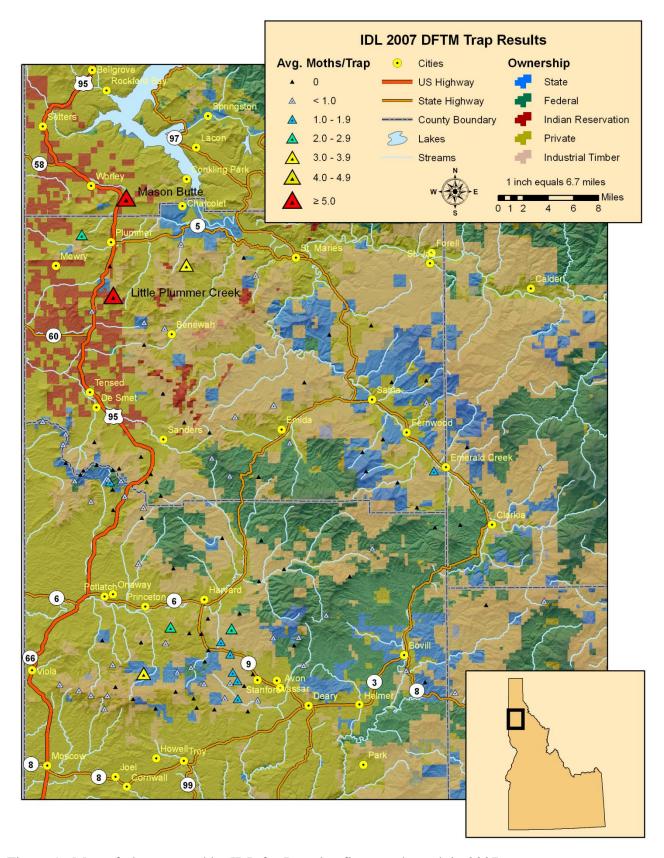


Figure 1. Map of plots trapped by IDL for Douglas-fir tussock moth in 2007.

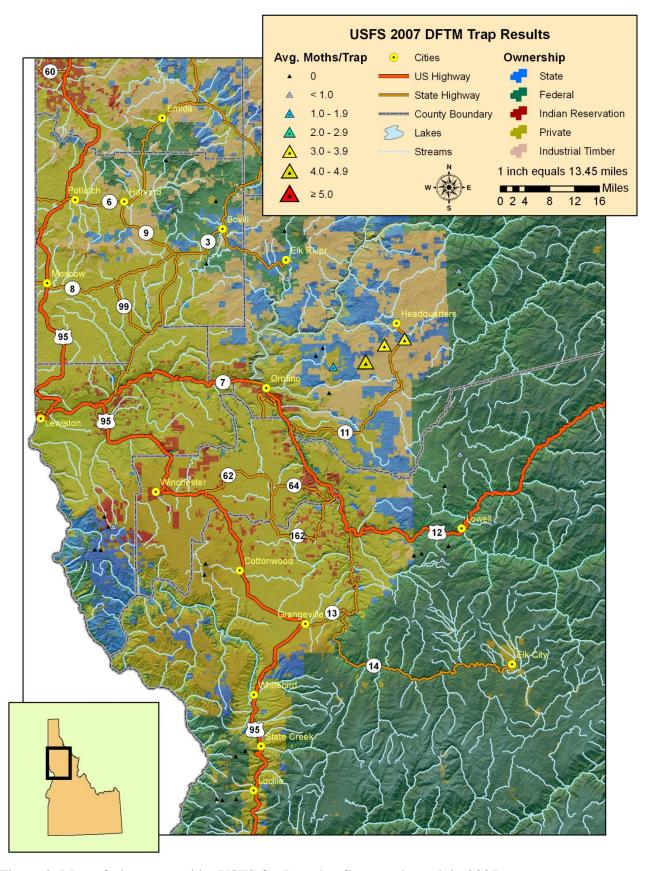


Figure 2. Map of plots trapped by USFS for Douglas-fir tussock moth in 2007.

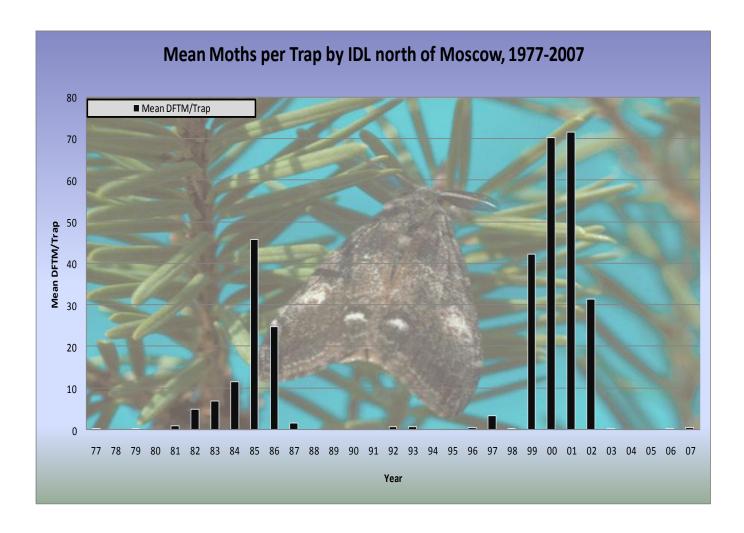


Figure 3. Mean trap catches of Douglas-fir tussock moth by IDL for plots north of Moscow from 1977 through 2007.

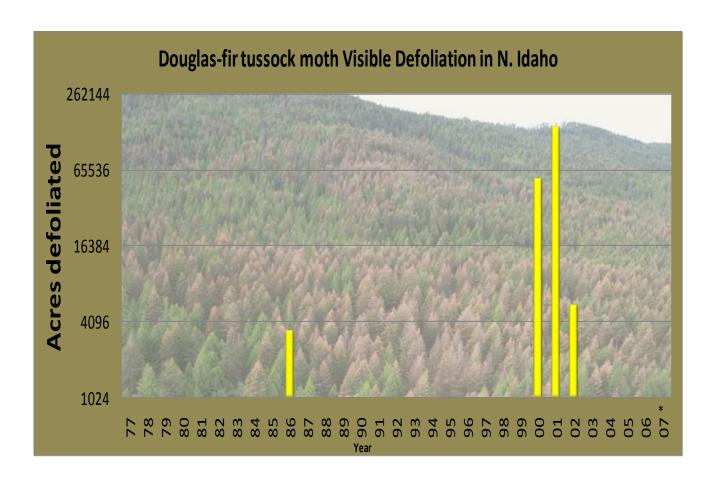


Figure 4. Aerially detected defoliation for the last two Douglas-fir tussock moth outbreaks.

Appendix 1. Mean trap catch for IDL monitored plots from Coeur d'Alene to Moscow for the past 7 years.

# IDL 2001 - 2007 Douglas-fir Tussock Moth Trap Results

Plot # Area   2007   2006   2005   2004   2003   2002   2011			Mean Numb							
Charles Butte	Plot #	Area	2007	2006	2005	2004	2003	2002	2001	
Charles Butte										
Peterson Point	3	Lolo Pass	O <sup>‡</sup>	0	0	0	0	8.2	110.2	
6         East Dennis         0.2*         0         0         0         0         0.2         14.8         85.8           7         East Gold Hill         0¹         0         0         0.2         21.48         88.0           9         Long Creek         0¹         0.4         0         0.2         0         0.2         0.3         0.2           10         Paradise Point         0.2²         0.2         0         0.2         0.0         1.8         75.2         58.4           11         Mineral Mountain         0.5¹         0         0         0         0.8         75.2         58.4           13         Spring Valley Creek         0¹         1         0         0         0         0.9         5.4         58.0           13         Spring Valley Creek         0¹         0         0         0         0         0         5.4         58.0           13         Spring Valley Creek         0²         0         0         0         0         0         0         0         5.8         102.8           15         Fairview Knob         0         0         0         0         0         0         0 <td>4</td> <td>Charles Butte</td> <td>O<sup>‡</sup></td> <td>0</td> <td>0</td> <td>0</td> <td>0.2</td> <td>28.2</td> <td>84.8</td>	4	Charles Butte	O <sup>‡</sup>	0	0	0	0.2	28.2	84.8	
7         East Gold Hill         0°         0         0         0         0         1.2         14.8         5.3.8           8         Flat Creek         0°         0.4         0         0.2         0         7.6         8.0.2           9         Long Creek         3°         0.2         0         0.2         0.2         0.2         0.2         0.1         9.1         91.8           10         Paradise Point         0.2°         0.2°         0.2         0         0.1         1.8         75.2         56.6         1.6           13         Spring Valley Creek         0°         1.2         0         0         0         5.4         58.0           14         Vassar Meadows         0.4°         0         0         0         0         5.8         102.8           15         Fairiew Rob         0.4°         0	5	Peterson Point	O <sup>‡</sup>	*	0	0	0.2	15.8	101.0	
Big   Flat Creek   0	6	East Dennis	0.2 <sup>‡</sup>	0	0	0	1.2	75	101.2	
10   Paradise Point   10   Paradise Point	7	East Gold Hill	O <sup>‡</sup>	0	0	0	0.2	14.8	53.8	
Paradise Point	8	Flat Creek	O <sup>‡</sup>	0.4	0	0.2	0	7.6	88.0	
Mineral Mountain	9	Long Creek	3 <sup>‡</sup>	0.2	0	0.2	0.2	33.6	0.2	
Mission Mountain	10	Paradise Point	0.2 <sup>‡</sup>	0.2	0	0.2	0	17	91.8	
13	11	Mineral Mountain	0.5 <sup>‡</sup>	0	0	0	1.8	75.2	56.4	
Vassar Meadows	12	Mission Mountain	0.2 <sup>‡</sup>	1.2	0	1.2	0.2	25.6	1.6	
15	13	Spring Valley Creek	0‡	*	0	0	0	5.4	58.0	
Nest Twin (10-115)	14	Vassar Meadows	0.4 <sup>‡</sup>	0	0	0	0	95.8	102.8	
22         Moscow Mtn (115-114)         0         0         0         0         0         0         2.8         78.0           101         Benewah         0.2**         1.4         0         1.4         2.8         52.2         92.4           102         Windfall Pass         0.75**         0.6         0         0.0         0.2         9.4         89.2           104         Moses Mountain         0         0         0         0         0         0         0.2         9.4         89.2           105         Little John Creek         0.6         0         0         0         0         0         0         0         6.4         67.8           106         Emida Peak         0.4         0         0         0         0         0         0         6.6         83.2         107.2           107         North-South Ski Area         0         0         0         0         0         0         0         0         6.6         83.2         107.2           108         Bald Mountain         ***         0         0         0         0         0         0         0         0         0         0         0 <td>15</td> <td>Fairview Knob</td> <td>0.4<sup>‡</sup></td> <td>0</td> <td>0</td> <td>0</td> <td>0.2</td> <td>39</td> <td>105.8</td>	15	Fairview Knob	0.4 <sup>‡</sup>	0	0	0	0.2	39	105.8	
101   Benewah   0.2	21	West Twin (10-115)	0.4	*	0	0	0	8.8	75.4	
102         Windfall Pass         0.75 <sup>1</sup> 0.6         0         0.6         40.4         99.6           103         Squaw Creek         0         *         0         0         0.2         9.4         89.2           104         Moses Mountain         0         0         0         0         0.2         6.4         67.8           105         Little John Creek         0.6         0         0         0         1.4         45         78.8           106         Emida Peak         0.4         0         0         0.2         2.6         64.2         75.8           107         North-South Ski Area         0         0         0         0         0         0         25.2         53.8           109         Laird Park         0         0         0         0         0         0         1         66         86.0           110         North Fork Palouse River         0         0         0         0         0         0         0         0         25.2         53.8           110         North Fork Palouse River         0         0         0         0         0         0         0         0	22	Moscow Mtn (115-114)	0	0	0	0	0.2	5.8	78.0	
103         Squaw Creek         0         *         0         0         0.2         9.4         89.2           104         Moses Mountain         0         0         0         0         0.2         6.4         67.8           105         Little John Creek         0.6         0         0         0         1.4         45         78.4           106         Emida Peak         0.4         0         0         0.2         2.6         64.2         75.8           107         North-South Ski Area         0         0         0         0         0         0         0.2         2.5         53.8           108         Bald Mountain         *         0         0         0         0         0         0         25.2         53.8           109         Laird Park         0         0         0         0         0         0         0         0         25.2         53.8           109         Laird Park         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0	101	Benewah	0.2 <sup>‡</sup>	1.4	0	1.4	2.8	52.2	92.4	
104         Moses Mountain         0         0         0         0         0.2         6.4         67.8           105         Little John Creek         0.6         0         0         0         1.4         45         78.4           106         Emida Peak         0.4         0         0         0.2         2.6         64.2         75.8           107         North-South Ski Area         0         0         0         0         0         0         0         0.2         25.2         53.8           109         Laird Park         0         0         0         0         0         1         66         86.0           110         North Fork Palouse River         0         0         0         0         1         86.0         0         0         0         1         86.0         0         0         0         0         0         2         67.6         93.6         0	102	Windfall Pass	0.75 <sup>‡</sup>	0.6	0	0.6	0.6	40.4	99.6	
105         Little John Creek         0.6         0         0         0.1         4         45         78.4           106         Emida Peak         0.4         0         0         0.2         2.6         64.2         75.8           107         North-South Ski Area         0         0         0         0         0         0.6         83.2         107.2           108         Bald Mountain         *         *         *         0         0         0         0         1         25.2         53.8           109         Laird Park         0         0         0         0         1         83.2         75.2           111         North Fork Palouse River         0         0         0         0         1         86.6         86.0           110         North Fork Palouse River         0         11.6         0         0 <td>103</td> <td>Squaw Creek</td> <td>0</td> <td>*</td> <td>0</td> <td>0</td> <td>0.2</td> <td>9.4</td> <td>89.2</td>	103	Squaw Creek	0	*	0	0	0.2	9.4	89.2	
106         Emida Peak         0.4         0         0         0.2         2.6         64.2         75.8           107         North-South Ski Area         0         0         0         0         0.6         83.2         107.2           108         Bald Mountain         *         *         0         0         0         0         25.2         53.8           109         Laird Park         0         0         0         0         1         66         86.0           110         North Fork Palouse River         0         11.2         70.2         0         0         0         11.2         70.2         0 <t< td=""><td>104</td><td>Moses Mountain</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0.2</td><td>6.4</td><td>67.8</td></t<>	104	Moses Mountain	0	0	0	0	0.2	6.4	67.8	
107         North-South Ski Area         0         0         0         0         0.6         83.2         107.2           108         Bald Mountain         *         *         0         0         0         25.2         53.8           109         Laird Park         0         0         0         0         1         66         86.0           110         North Fork Palouse River         0         0         0         0         1         83.2         75.2           111         Mica Mountain         0.2         0         0         0         0.2         67.6         93.6           112         Schwartz Creek         0         0         0         0         0         0.2         67.6         93.6           113         Big Bear Creek         0.6*         0.6*         0.6         0         0.6         0.2         47.8         87.0           114         Big Meadow Creek         0.6*         0.2         0         0.2         0         0.2         0         0.2         47.8         87.0           115         East Twin Mountain         0.4*         0.2         0         0         0         0         5.4         4	105	Little John Creek	0.6	0	0	0	1.4	45	78.4	
108         Bald Mountain         *         *         0         0         0         25.2         53.8           109         Laird Park         0         0         0         0         1         66         86.0           110         North Fork Palouse River         0         0         0         0         1         83.2         75.2           111         Mica Mountain         0.2         0         0         0         0         0.2         67.6         93.6           112         Schwartz Creek         0         0         0         0         0         0.2         80.6         110.6           113         Big Bear Creek         0.6²         0.6²         0.6         0         0.6         0.2         47.8         87.0           114         Big Meadow Creek         0²         0.2         0         0.2         0         0.2         0         11.2         70.2           115         East Twin Mountain         0.4²         0.2         0         0.2         0         0         51         89.0           117         Sheep Creek         0²         0.2         0         0         0         27.8         83.2	106	Emida Peak	0.4	0	0	0.2	2.6	64.2	75.8	
109	107	North-South Ski Area	0	0	0	0	0.6	83.2	107.2	
110         North Fork Palouse River         0         0         0         0         0         2         67.6         93.6           111         Mica Mountain         0.2         0         0         0         0.2         67.6         93.6           112         Schwartz Creek         0         0         0         0         0.2         80.6         110.6           113         Big Bear Creek         0.6*         0.6         0         0.6         0.2         47.8         87.0           114         Big Meadow Creek         0*         0.2         0         0.2         0         11.2         70.2           115         East Twin Mountain         0.4*         0.2         0         0.2         0         7.6         85.4           116         Crane Point         0         0         0         0         51         89.0           117         Sheep Creek         0*         0         0         0         27.8         83.2           118         West Fork Mission Creek         0.2         0         0         0         22.2         47.6           119         1 Mi N. of Mineral Mtn (11-216)         0         0         0	108	Bald Mountain	*	*	0	0	0	25.2	53.8	
1111         Mica Mountain         0.2         0         0         0.2         67.6         93.6           112         Schwartz Creek         0         0         0         0         0.2         80.6         110.6           113         Big Bear Creek         0.6*         0.6         0         0.6         0.2         47.8         87.0           114         Big Meadow Creek         0*         0.2         0         0.2         0         11.2         70.2           115         East Twin Mountain         0.4*         0.2         0         0.2         0         7.6         85.4           116         Crane Point         0         *         0         0         0         0         51         89.0           117         Sheep Creek         0*         0         0         0         27.8         83.2           118         West Fork Mission Creek         0.2         *         0         0         0         22.2         47.6           119         1 Mi N. of Mineral Mtn (11-216)         0         *         0         0         0         25.2         0.2           200         2 mi W of Plummer         2.6         *	109	Laird Park	0	0	0	0	1	66	86.0	
112         Schwartz Creek         0         0         0         0.2         80.6         110.6           113         Big Bear Creek         0.6*         0.6*         0.0         0.6         0.2         47.8         87.0           114         Big Meadow Creek         0*         0.2         0         0.2         0         11.2         70.2           115         East Twin Mountain         0.4*         0.2         0         0.2         0         7.6         85.4           116         Crane Point         0         *         0         0         0         0         51         89.0           117         Sheep Creek         0*         0.2         0         0         27.8         83.2           118         West Fork Mission Creek         0.2         *         0         0         0         0         22.2         47.6           119         1 Mi N. of Mineral Mtn (11-216)         0         *         0         0         0         0         25.2         0.2           200         2 mi W of Plummer         2.6         *         0         0         0         16.2         80.2           201         Coon Creek         <	110	North Fork Palouse River	0	0	0	0	1	83.2	75.2	
113       Big Bear Creek       0.6 <sup>‡</sup> 0.6 0.0       0.6 0.2       47.8       87.0         114       Big Meadow Creek       0 <sup>‡</sup> 0.2 0       0.22 0       0.12.2       70.2         115       East Twin Mountain       0.4 <sup>‡</sup> 0.2 0       0.2 0       7.6 85.4         116       Crane Point       0 * 0 0       0 0 0       51 89.0         117       Sheep Creek       0 <sup>‡</sup> 0.2 0       0 0 2 27.8       83.2         118       West Fork Mission Creek       0.2 * 0 0 0 0 0 0 22.2       47.6         119       1 Mi N. of Mineral Mtn (11-216)       0 0 0 0 0 0 22.2       27.2       47.6         119       1 Mi N. of Plummer       2.6 * 0 0 0 0 0 0 0 22.2       21.6 93.8         201       Coon Creek       3 <sup>‡</sup> 2 0 0 0.4 0.2 21.6       93.8         202       3 mi E of Benewah       * 0 0 0 0 0.2 0.2 0.6 21 102.2       10.2         203       Benewah Point       0.4 * 0 0 0 0 0 23.8 *       *         204       John's Point       * 0 0 0 0 0 23.8 *       *         205       3 mi E of Charles Butte       0.8 * 0 0 0 0 0 20.2 0.2 0.2 0.4 63.6 72.6         206       Sunset Mountain       * 0 0 0 0 0 0 23.8 *       *         207       W	111	Mica Mountain	0.2	0	0	0	0.2	67.6	93.6	
1144       Big Meadow Creek       0thousand       0.2       0       0.2       0       11.2       70.2         115       East Twin Mountain       0.4thousand       0.2thousand       0       0.2thousand       0       7.6thousand       85.4         116       Crane Point       0       0       0       0       0       51       89.0         117       Sheep Creek       0thousand       0       0       0       0       27.8thousand       83.2         118       West Fork Mission Creek       0.2thousand       0       0       0       0       22.2thousand       47.6thousand         119       1 Mi N. of Mineral Mtn (11-216)       0       0       0       0       0       22.2thousand       0       0       0       25.2thousand       0.2thousand       0       0       0       25.2thousand       0       0       0       16.2thousand       80.2thousand       80.2thousand       0       0       0       16.2thousand       80.2thousand       80.2thousand       93.8thousand       93.8thous	112	Schwartz Creek	0	0	0	0	0.2	80.6	110.6	
1115       East Twin Mountain       0.4 <sup>‡</sup> 0.2       0       0.2       0       7.6       85.4         116       Crane Point       0       *       0       0       0       51       89.0         117       Sheep Creek       0 <sup>‡</sup> 0.2       0       0.2       0       27.8       83.2         118       West Fork Mission Creek       0.2       *       0       0       0       22.2       47.6         119       1 Mi N. of Mineral Mtn (11-216)       0       *       0       0       0       0       25.2       0.2         200       2 mi W of Plummer       2.6       *       0       0       0       16.2       80.2         201       Coon Creek       3 <sup>‡</sup> 2       0       0.4       0.2       21.6       93.8         202       3 mi E of Benewah       *       0.2       0       0.2       0.6       21       102.2         203       Benewah Point       0.4       *       0       0       0       8.2       92.4         204       John's Point       *       *       0       0       0       23.8       *         205 <td< td=""><td>113</td><td>Big Bear Creek</td><td>0.6<sup>‡</sup></td><td>0.6</td><td>0</td><td>0.6</td><td>0.2</td><td>47.8</td><td>87.0</td></td<>	113	Big Bear Creek	0.6 <sup>‡</sup>	0.6	0	0.6	0.2	47.8	87.0	
116       Crane Point       0       *       0       0       0       51       89.0         117       Sheep Creek       0*       0.2       0       0.2       0       27.8       83.2         118       West Fork Mission Creek       0.2       *       0       0       0       22.2       47.6         119       1 Mi N. of Mineral Mtn (11-216)       0       *       0       0       0       0       25.2       0.2         200       2 mi W of Plummer       2.6       *       0       0       0       0       16.2       80.2         201       Coon Creek       3*       2       0       0.4       0.2       21.6       93.8         202       3 mi E of Benewah       *       0.2       0       0.2       0.6       21       102.2         203       Benewah Point       0.4       *       0       0       0       8.2       92.4         204       John's Point       *       *       0       0       0       23.8       *         205       3 mi E of Charles Butte       0.8*       0       0       0       20.2       0.4       63.6       72.6	114	Big Meadow Creek	0‡	0.2	0	0.2	0	11.2	70.2	
117         Sheep Creek         0that of the content of	115	East Twin Mountain	0.4 <sup>‡</sup>	0.2	0	0.2	0	7.6	85.4	
118       West Fork Mission Creek       0.2       *       0       0       22.2       47.6         119       1 Mi N. of Mineral Mtn (11-216)       0       *       0       0       0       25.2       0.2         200       2 mi W of Plummer       2.6       *       0       0       0       16.2       80.2         201       Coon Creek       3‡       2       0       0.4       0.2       21.6       93.8         202       3 mi E of Benewah       *‡       0.2       0       0.2       0.6       21       102.2         203       Benewah Point       0.4       *       0       0       0       8.2       92.4         204       John's Point       *       *       0       0       0       8.2       92.4         204       John's Point       *       *       0       0       0       23.8       *         205       3 mi E of Charles Butte       0.8‡       0       0.2       0.2       0.4       63.6       72.6         206       Sunset Mountain       *       *       0       0       0       0       23.2       *         208       Cedar Butte	116	Crane Point	0	*	0	0	0	51	89.0	
119 1 Mi N. of Mineral Mtn (11-216) 200 2 mi W of Plummer 2.6 * 0 0 0 0 16.2 80.2 201 Coon Creek 3	117	Sheep Creek	0 <sup>‡</sup>	0.2	0	0.2	0	27.8	83.2	
200       2 mi W of Plummer       2.6       *       0       0       0       16.2       80.2         201       Coon Creek       3*       2       0       0.4       0.2       21.6       93.8         202       3 mi E of Benewah       **       0.2       0       0.2       0.6       21       102.2         203       Benewah Point       0.4       *       0       0       0       8.2       92.4         204       John's Point       *       *       0       0       0       8.2       92.4         205       3 mi E of Charles Butte       0.8*       0       0.2       0.2       0.4       63.6       72.6         206       Sunset Mountain       *       *       0       0       0       20.8       *         207       West Fork Emerald Creek       0       *       0       0       0       23.2       *         208       Cedar Butte       0       *       0       0       0       22.4       76.2         209       Abes Knob       0.2       *       0       0       0       23.8       88.4         210       West Fork Deep Creek       0.	118	West Fork Mission Creek	0.2	*	0	0	0	22.2	47.6	
201       Coon Creek       3t       2       0       0.4       0.2       21.6       93.8         202       3 mi E of Benewah       t       0.2       0       0.2       0.6       21       102.2         203       Benewah Point       0.4       t       0       0       0       8.2       92.4         204       John's Point       t       t       0       0       0       0       23.8       t         205       3 mi E of Charles Butte       0.8t       0       0.2       0.2       0.4       63.6       72.6         206       Sunset Mountain       t       t       0       0       0       0       20.8       t         207       West Fork Emerald Creek       0       t       0       0       0       0       23.2       t         208       Cedar Butte       0       t       0       0       0       0       22.4       76.2         209       Abes Knob       0.2       t       0       0       0       23.8       88.4         210       West Fork Deep Creek       0.2t       0       0.2       0.2       77       90.6         211	119	1 Mi N. of Mineral Mtn (11-216)	0	*	0	0	0	25.2	0.2	
202       3 mi E of Benewah       **       0.2       0       0.2       0.6       21       102.2         203       Benewah Point       0.4       *       0       0       0       8.2       92.4         204       John's Point       *       *       0       0       0       0       23.8       *         205       3 mi E of Charles Butte       0.8 <sup>‡</sup> 0       0.2       0.2       0.4       63.6       72.6         206       Sunset Mountain       *       *       0       0       0       20.8       *         207       West Fork Emerald Creek       0       *       0       0       0       23.2       *         208       Cedar Butte       0       *       0       0       0       22.4       76.2         209       Abes Knob       0.2       *       0       0       0       23.8       88.4         210       West Fork Deep Creek       0.2       0       0.2       0.2       77       90.6         211       Cherry Butte       0       0       0       0.2       0.4       67.2       88.6	200	2 mi W of Plummer	2.6	*	0	0	0	16.2	80.2	
203 Benewah Point	201	Coon Creek	3 <sup>‡</sup>	2	0	0.4	0.2	21.6	93.8	
204       John's Point       *       *       0       0       0       23.8       *         205       3 mi E of Charles Butte       0.8 <sup>‡</sup> 0       0.2       0.2       0.4       63.6       72.6         206       Sunset Mountain       *       *       0       0       0       0       20.8       *         207       West Fork Emerald Creek       0       *       0       0       0       0       23.2       *         208       Cedar Butte       0       *       0       0       0       0       22.4       76.2         209       Abes Knob       0.2       *       0       0       0       23.8       88.4         210       West Fork Deep Creek       0.2 <sup>‡</sup> 0.2       0       0.2       0.2       77       90.6         211       Cherry Butte       0       0       0       0.2       0.4       67.2       88.6	202	3 mi E of Benewah	*‡	0.2	0	0.2	0.6	21	102.2	
205       3 mi E of Charles Butte       0.8t 0 0.2 0.2 0.2 0.4 63.6 72.6         206       Sunset Mountain       * * 0 0 0 0 20.8 *         207       West Fork Emerald Creek       0 * 0 0 0 23.2 *         208       Cedar Butte       0 * 0 0 0 0 22.4 76.2         209       Abes Knob       0.2 * 0 0 0 0 23.8 88.4         210       West Fork Deep Creek       0.2t 0.2 0 0 0.2 0.2 77 90.6         211       Cherry Butte       0 t 0 0 0 0 0.2 0.4 67.2 88.6	203	Benewah Point	0.4	*	0	0	0	8.2	92.4	
206       Sunset Mountain       *       *       0       0       0       20.8       *         207       West Fork Emerald Creek       0       *       0       0       0       0       23.2       *         208       Cedar Butte       0       *       0       0       0       0       22.4       76.2         209       Abes Knob       0.2       *       0       0       0       23.8       88.4         210       West Fork Deep Creek       0.2       0.2       0       0.2       0.2       77       90.6         211       Cherry Butte       0       0       0.2       0.4       67.2       88.6	204	John's Point	*	*	0	0	0	23.8	*	
207 West Fork Emerald Creek  208 Cedar Butte  209 Abes Knob  210 West Fork Deep Creek  211 Cherry Butte  200 Striset Modifical  201 0 0 0 0 23.2 *  202 0 0 0 0 0 22.4 76.2  203 0 0 0 0 0 23.8 88.4  210 0 0 0 0 0 23.8 88.4  210 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	205	3 mi E of Charles Butte	0.8 <sup>‡</sup>	0	0.2	0.2	0.4	63.6	72.6	
208 Cedar Butte 0 * 0 0 0 22.4 76.2 209 Abes Knob 0.2 * 0 0 0 23.8 88.4 210 West Fork Deep Creek 0.2 0 0.2 0.2 0.2 77 90.6 211 Cherry Butte 0 0 0 0 0.2 0.4 67.2 88.6	206	Sunset Mountain	*	*	0	0	0	20.8	*	
209       Abes Knob       0.2       *       0       0       0       23.8       88.4         210       West Fork Deep Creek       0.2 <sup>±</sup> 0.2       0       0.2       77       90.6         211       Cherry Butte       0 <sup>±</sup> 0       0       0.2       0.4       67.2       88.6	207	West Fork Emerald Creek	0	*	0	0	0	23.2	*	
210 West Fork Deep Creek 0.2 <sup>‡</sup> 0.2 0 0.2 0.2 77 90.6 211 Cherry Butte 0 <sup>‡</sup> 0 0 0.2 0.4 67.2 88.6	208	Cedar Butte	0	*	0	0	0	22.4	76.2	
211 Cherry Butte 0 0 0 0.2 0.4 67.2 88.6	209	Abes Knob	0.2	*	0	0	0	23.8	88.4	
•	210	West Fork Deep Creek	0.2 <sup>‡</sup>	0.2	0	0.2	0.2	77	90.6	
212 Jackson Mountain 0.2 * 0 0 19.6 *	211	Cherry Butte	0 <sup>‡</sup>	0	0	0.2	0.4	67.2	88.6	
	212	Jackson Mountain	0.2	*	0	0	0	19.6	*	

IDL 2001 - 2007 Douglas-fir Tussock Moth Trap Results Cont.

Mean Number of Moths Per Trap 2007 Plot # 2006 2005 2004 2001 Area 2003 2002 0‡ 216 1 mi NW of Mineral Mtn 0.4 0 0.4 0.2 1 0.2 217 Head of Sheep Creek (216-117-2) 0‡ 0.2 0 0.2 0.6 21.2 97.2 300 Mission Mountain (#2) 0 0.4 0 0.4 0.6 6.4 67.0 301 1.5 mi S of Mineral Mtn 0 0.2 0 0.2 0.2 69.4 91.2 302 Middle Fork of Deep Creek 1 (301-216-1) 1 0 0 0 63.8 3.6 Middle Fork of Deep Creek 2 (301-216-3) 15.8 303 0.2 0.4 0 0.2 1 58 400  $0.6^{\ddagger}$ 0.2 0 0.2 75.8 86.6 3 mi S of Mineral Mtn 0.6 401 Flynn Butte 0 0 0 0 3.2 95.2 96.4  $0.2^{\ddagger}$ 402 2 mi SE of Browns Mdw 0.2 0 0.2 0 15.2 57.4 500 3 mi SW of Harvard 0‡ 0 0.2 0 18.8 74.6 0.2 501 3 mi S of Moon Hill 0 0 0 0 16.2 97.6 502 0.2 0 0 0.6 67.6 75.0 3 mi W of Crane Point 503 3 mi N of Stanford Point 0 0 0 10.2 89.4 1 0‡ 2 mi N of Stanford Point 0.4 0 0.4 0.2 47.8 86.2 504  $0.2^{\ddagger}$ 505 1 mi SW of Stanford Point 0 0 0 38.4 47.0 506 1 mi S of Stanford Point 1 0 0 0 23.4 67.8 507 1 mi NE of Stanford Point 0 0 0 0 8.0 40.6 87.4 508 1 mi W of Stanford Point 0.4 0.2 0 0.2 0 20.6 92.4 1.2<sup>‡</sup> 509 2 mi NW of Stanford Point 0.6 0.2 0.4 0.4 43.2 81.6 510 Moon Hill 0‡ 0 0.2 8.0 35 67.2 0.2 511 2 mi SE of Moon Hill 0 0 0 0.2 13.2 80.4 512 3 mi S of Mineral Mtn 0 0 0 0.2 70.2 513 2 mi SW of Moon Hill 1.4 0 0 0 9.6 9.2 514 1.5 mi NW of Avon 0 0 0 0 6.8 61.4 0.25 600 3.4 mi NNW of Princeton 601 Macumber Meadows 0# 602 S of Shay Hill 0.2 603 3 mi. S of Chatcolet 0 701 0 88.6 Fourmile Creek 0.4 0 0 9 North of Granite Point 702 0 0 0.2 0 5.8 76 703 Bergs Creek 0 0 0 0 12.2 96.6 704 West Fork Big Bear Creek 0‡ 0.2 0 0.2 0.2 13.2 61 705 2 Mi NW of Stanford PT 1.5<sup>‡</sup> 0.8 0 8.0 0.4 46.4 89.4 706 1 Mi S. of Iron Mtn 0.8 0 0 0 27.2 87.8 707 Iron Mtn 0 0 0 6.6 97 708  $0.4^{\ddagger}$ 0 65.6 Little Bear Creek 0 0 108.6 709 0 0 50.4 96.2 Ruby Creek 0 0 710 **Turnbow Creek** 2.4<sup>‡</sup> 1.4 0 1.4 0.2 43 70.6 711 East Fork Flat Creek 2<sup>‡</sup> 2.6 71.4 2.6 0 0.2 55 712 **Turnbow Point** 0.2 0 0 0.2 7.8 38 713 3 Mi S. of Potlatch 0‡ 0 0 0 6.6 30 0 0 79.6 714 Rocky Point 8.0 0 13.2 715 Hatter Creek 0‡ 0.6 0 0.6 0.2 7.4 32 716 Head of Hatter Creek 0 0 0 0 11.8 80.8 717 0 0 0 21.2 81.4 Nora Creek 0 718 Crummaring Creek 0.2 0 0 0 12.4 70.4 719 0 0 Basalt Hill 0.2 0 19 11.6 720 **Browns Meadow** 0.4 0 0 0 0.2 11.2 2.6 721 Smith Creek 0 0 0 0 100.2 70.6

IDL 2001 - 2007 Douglas-fir Tussock Moth Trap Results Cont.

Mean Number of Moths Per Trap Plot # 2007 2006 2005 2004 Area 2003 2002 2001 722 Prospect Peak 0 0 0 0 31.2 56.8 0 723 West Fork Mission Creek 0 0 0 27.8 22.2 724 0‡ 0 0 77.2 Huckleberry Mtn 0 16.6 725 North Fork Pine Creek 0.75 0 0 0 21.6 93 726 Mineral Creek 0 0 0 0 20.2 78 727 South of Sanders 0 0 0 0 77.8 86.8 800 7.25 0 Mason Butte 20.8 63 801 1 mi SW of Moctileme Butte 0.2 0 30.2 91.4 802 1.9 mi S of Plummer 0 0 24.8 75.2 803 Little Plummer Creek 5.8 0 18 54.4 804 0 Syringa Creek 0 21.2 66.4 805 0 20.4 John Point 61.6 806 2 mi W of Pettis Point 0 0 22.6 71.2 807 Davis Creek 0 0 17.8 55.6 808 Renfro Creek 0 0 14.8 44.2 809 Crystal Creek 0.2 0 10.4 29.4 810 Child Creek 0 52.8 0 17.2 811 Hobo Pass 0.6 0 25.4 7.8 812 0.4 0 9.2 Hemlock Butte 28.2 813 Carpenter Peak 0 0 18.8 57.8 814 Tyson Creek 0 0 30.2 87.6 815 Heinaman Creek 0 0 25.2 85.2 816 Green Mtn 0 0 31 86.2 817 Willow Creek 1.2 0 22.2 73.2 818 Head of Emerald Creek 0.6 0 28.2 86 819 East Fork Emerald Creek 0 0 25 75.2 820 Head of Bobs Creek 0 0 25.4 79 821 East Fork of Potlatch River 0 0 25.2 67.2 822 Head of Moose Creek 0.2 0 24.8 69.6 Beals Butte 823 0 0 39 106.2 Number of Sites Trapped: 120 51 98 98 122 122 117 Average Number of Moths per Plot: 0.42 0.33 0.00 0.16 0.23 31.30 71.50

<sup>\*</sup> Indicates Sites Not Trapped

<sup>&</sup>lt;sup>‡</sup> Indicates larval survey

Appendix 2. Mean trap catch for USFS monitored plots from Potlatch to Lucille for the past 7 years.

USFS 2001 - 2007 Douglas-fir Tussock Moth Trap Results

Mean Number of Moths per Trap Plot # Site Name 2007 2006 2005 2004 2003 2002 2001 1-1 Lodge Pt 0.0 0.0 0.0 0.0 0.2 1.2 1.6 1-2 Goddard 0.3 1-3 0.2 0.0 4.8 Pine Knob 0.0 0.0 1.0 1-4 Potatoe Hill 0.0 0.0 0.0 0.0 0.0 0.2 0.2 Big Tinker 1-5 0.0 0.2 0.0 0.0 0.0 0.6 1.4 2-1 Rhett Cr 0.0 0.0 0.0 0.0 0.0 0.0 0.4 2-2 0.0 8.0 Christie Cr 0.0 0.0 0.0 0.0 0.0 2-3 Cow Cr Saddle 0.0 0.0 0.0 0.2 0.2 2-4 Low Saddle 0.0 0.4 0.0 0.0 0.0 0.0 0.4 2-5 S. Cow Cr 0.0 0.0 0.0 0.0 0.0 0.0 1.8 \* 2-6 Spring Mtns 0.0 0.0 \* 3-1 Keuterville 0.0 0.0 0.0 0.0 0.0 0.0 2.2 3-2 0.0 0.0 2.8 Cottonwood Butte 0.0 0.0 0.0 0.0 0.0 0.0 10.2 4-1 Lake Waha 0.0 0.2 0.0 0.0 4-2 Black Pine 0.0 0.2 0.0 0.0 0.2 18.2 \* 4-3 Junction 0.0 0.0 0.0 0.0 0.0 0.0 4-4 Captain John 0.0 0.0 0.0 0.0 0.2 3.6 0.0 4-5 Webb Cr 0.0 0.0 0.0 0.0 0.0 0.0 1.4 4-6 Forest 0.0 4.0 5-1 Johnson 0.0 0.0 0.0 4.8 5-2 Angel Butte 0.0 0.0 0.0 0.4 8.0 5.8 5-3 Grangemont 1.4 1.4 0.0 0.0 0.4 2.2 16.2 5-4 Bargamin Cr 4.6 0.0 0.0 0.0 0.0 4.8 35.6 5-5 Bald Mtn 3.4 1.8 0.0 0.0 0.2 9.0 36.0 5-6 3.2 0.6 14.6 **Summit Landing** 0.0 0.0 0.2 0.0 5-7 Shin Pt 0.0 0.0 0.0 0.0 0.0 1.3 13.2 5-8 Swanson Cr 8.0 0.6 0.0 0.0 17.5 0.0 1.4 Skull Cr 5-9 5-10 Cooper 0.0 0.0 0.0 0.0 0.0 0.2 3.8 6-1 Canyon Junction 0.4 0.0 0.0 0.0 0.0 8.0 11.2 6-2 Fan saddle 0.0 0.0 0.0 0.0 0.0 0.2 0.6 7-1 Laird Park 0.2 0.0 0.0 0.0 52.2 0.0 7-2 Little Bald Mtn. 0.0 0.0 0.0 0.2 22.0 0.0 7-3 Little Boulder Cr. 0.0 1.2 0.0 0.0 4.0 40.4 7-4 W. Fork Potlatch R. 0.0 8.0 0.6 0.0 2.4 40.4 7-5 Elk Creek Falls 0.2 0.4 0.4 0.0 4.8 15.8 Morris Creek 7-6 0.0 0.2 0.0 0.0 0.2 26.5 Number of Plots Trapped: 31 33 33 33 32 33 26 Mean Number of Moths per Site: 0.47 0.24 0.03 0.01 0.45 6.82 8.30

<sup>\*</sup> Indicates Plots Not Trapped